

1. Which one is not state function

- |                             |                    |
|-----------------------------|--------------------|
| <b>A.</b> Internal energy   | <b>B.</b> Enthalpy |
| <b>C.</b> Gibbs free energy | <b>D.</b> Work     |

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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2. If  $\Delta H$  value is less than zero then reaction will be

- |   |                         |
|---|-------------------------|
| <b>A.</b> Exothermic                                  | <b>B.</b> Endothermic   |
| <b>C.</b> May or may not be Exothermic or Endothermic | <b>D.</b> None of these |

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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3. If internal energy of the system is increased

- |  |  |
|--|--|
| <b>A.</b> Change in state of the system is increased | <b>B.</b> Temperature of the system may rise |
| <b>C.</b> Chemical reaction may take place           | <b>D.</b> All                                |

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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4. Which is true for a spontaneous endothermic process?

- |                          |                          |
|--------------------------|--------------------------|
| <b>A.</b> $\Delta H < 0$ | <b>B.</b> $\Delta G < 0$ |
| <b>C.</b> $\Delta S < 0$ | <b>D.</b> $\Delta G > 0$ |

**Answer & Explanation**

**Answer:** Option **B**

**Explanation:**

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5. A reaction has values of  $\Delta H$  and  $\Delta S$  which are both positive. The reaction
- |   |  |
|---|--|
| <b>A.</b> Is spontaneous                | <b>B.</b> Spontaneity is temperature dependent |
| <b>C.</b> Has an increasing free energy | <b>D.</b> Is non-spontaneous                   |

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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6. \_\_\_\_\_ is study about energy of a chemical system
- |                             |                          |
|-----------------------------|--------------------------|
| <b>A.</b> thermochemistry   | <b>B.</b> thermodynamics |
| <b>C.</b> chemical kinetics | <b>D.</b> stoichiometry  |

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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7. The environment in which a system is studied is
- |                          |                 |
|--------------------------|-----------------|
| <b>A.</b> State function | <b>B.</b> phase |
| <b>C.</b> surrounding    | <b>D.</b> state |

**Answer & Explanation**

**Answer:** Option **C**

**Explanation:**

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8. Unit of heat in SI system is

A. J

B. KCal

C. Cal

D. GJ

**Answer & Explanation**

**Answer:** Option A

**Explanation:**

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9. Anything which depends upon initial and final state of a system is

A. environment

B. surrounding

C. state function

D. enthalpy

**Answer & Explanation**

**Answer:** Option C

**Explanation:**

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10. Total energy of a system is

A. P.E + K.E

B. P.E + heat energy

C. K.E + heat energy

D. P.E + mechanical energy

**Answer & Explanation**

**Answer:** Option A

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11. Mathematical form of first law of thermodynamics is

A.  $\Delta H = q_p$

B.  $\Delta E = q + W$

C.  $\Delta E = q \times v$

D. all of the above

**Answer & Explanation**

**Answer:** Option B

**Explanation:**

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12. Reaction in which heat evolves is called

- |                           |                       |
|---------------------------|-----------------------|
| <b>A.</b> endothermic     | <b>B.</b> spontaneous |
| <b>C.</b> non-spontaneous | <b>D.</b> exothermic  |

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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13.  $\text{CuSO}_4 + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{Cu}$  is

- |                                |                                    |
|--------------------------------|------------------------------------|
| <b>A.</b> Spontaneous reaction | <b>B.</b> Non-spontaneous reaction |
| <b>C.</b> Endothermic          | <b>D.</b> Exothermic               |

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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14. Pumping of water uphill is

- |                                |                                   |
|--------------------------------|-----------------------------------|
| <b>A.</b> spontaneous process  | <b>B.</b> non-spontaneous process |
| <b>C.</b> irreversible process | <b>D.</b> reversible process      |

**Answer & Explanation**

**Answer:** Option **B**

**Explanation:**

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15. State function the macroscopic property of system depends upon

- |                            |                         |
|----------------------------|-------------------------|
| <b>A.</b> path of reaction | <b>B.</b> initial state |
|----------------------------|-------------------------|

**C.** final state

**D.** initial and final state

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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16. Which one of the following is a state function?

**A.** pressure

**B.** temperature

**C.** enthalpy

**D.** all of the above

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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17. When enthalpy of reactants is higher than product then reaction will be

**A.** endothermic

**B.** spontaneous

**C.** non-spontaneous

**D.** exothermic

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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18. Enthalpy of a reaction can be measured by

**A.** glass calorimeter

**B.** manometer

**C.** Barometer

**D.** thermometer

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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19. Enthalpy of combustion for food fuel and other compounds can be measured accurately by

- |                             |                            |
|-----------------------------|----------------------------|
| <b>A.</b> glass calorimeter | <b>B.</b> bomb calorimeter |
| <b>C.</b> thermometer       | <b>D.</b> manometer        |

**Answer & Explanation**

**Answer:** Option **B**

**Explanation:**

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20. The lattice energy of NaCl is

- |                       |                       |
|-----------------------|-----------------------|
| <b>A.</b> 787 KJ/mole | <b>B.</b> 787 J/mole  |
| <b>C.</b> 780 KJ/mole | <b>D.</b> 790 KJ/mole |

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

21. Most of thermodynamic parameters are

- |                  |                           |
|------------------|---------------------------|
| <b>A.</b> system | <b>B.</b> surrounding     |
| <b>C.</b> phase  | <b>D.</b> state functions |

**Answer & Explanation**

**Answer:** Option **D**

**Explanation:**

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22.  $\Delta H$  of a system can be calculated by which of following relationship

- |  |                            |
|--|----------------------------|
| <b>A.</b> $q = m \times s \times \Delta T$ | <b>B.</b> $q = \Delta E$   |
| <b>C.</b> $q = m \times v \times \Delta T$ | <b>D.</b> $q = p \Delta v$ |

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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23. Change in enthalpy ( $\Delta H$ ) of a system can be calculated by following relationship

**A.**  $\Delta H = \Delta E + P\Delta V$

**B.**  $\Delta H = \Delta E - P\Delta V$

**C.**  $\Delta H = \Delta E - q$

**D.**  $\Delta H = \Delta E + q$

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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24. Which of the following is correct

**A.**  $q_p > q_v$

**B.**  $\Delta E < \Delta H$

**C.**  $\Delta E > \Delta H$

**D.** Both a & b

**Answer & Explanation**

**Answer:** Option **A**

**Explanation:**

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25. Two fundamental ways to transfer energy are

**A.** pressure and temperature

**B.** pressure and volume

**C.** heat and work

**D.** heat and volume

**Answer & Explanation**

**Answer:** Option **C**

**Explanation:**

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26. Which of the following processes has always  $\Delta H = -ve$

- A. formation of compound
- B. combustion
- C. dissolution of ionic compound
- D. dilution of a solution

**Answer & Explanation**

**Answer:** Option **B**

**Explanation:**

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27. Enthalpy change can be

- A. calculated by Hess law
- B. can be measured by calorimeter
- C. both a and b
- D. none

**Answer & Explanation**

**Answer:** Option **C**

**Explanation:**

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28. If there is interconversion of solid and liquid states then

- A.  $\Delta V = 0$
- B.  $\Delta H = \Delta E$
- C.  $\Delta H > \Delta E$
- D. both a & b

**Answer & Explanation**

**Answer:** Option **B**

**Explanation:**

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29. In order to determine  $\Delta H_{latt}$  of ionic compound which is correct relationship

- A.  $\Delta H_{latt} = \Delta H_f - \Delta H_x$
- B.  $\Delta H_{latt} = \Delta H_f + \Delta H_x$
- C.  $\Delta H_{latt} = \Delta H_a + \Delta H_v$
- D.  $\Delta H_{latt} = \Delta H_f - \Delta H_{sol}$

**Answer & Explanation**



**Answer:** Option **A**

**Explanation:**

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30. Hess law can be applied to determine

**A.**  $\Delta H_f$

**B.**  $\Delta H_{latt}$

**C.**  $\Delta H_{comb}$

**D.** All of the above

**Answer & Explanation**

**Answer:** Option **D**